XLVII.—*Catalogue of Irish Entozoa, with observations.* By O'Bryen Bellingham, M.D., Fellow of and Professor of Botany to the Royal College of Surgeons in Ireland, Member of the Royal Zoological, Geological and Natural History Societies of Dublin, &c.

[Continued from p. 340.]

Genus 12. Distoma.

(Derived from δὶς, *bis*, and στόμα, *os*.)

Body soft, flattened, sometimes nearly or quite cylindrical, without articulations, provided with two more or less circular pores or orifices; one of which is anterior and terminal, the other ventral.

The genus *Distoma* was established by Linnæus under the name of *Fasciola*; this was adopted by Müller and Gmelin: subsequently it was changed to *Planaria* by Gœtze; but the term *Distoma*, proposed by Retzius, is now universally adopted. The genus *Distoma* contains a very large number of species, 162 being enumerated by Rudolphi in his 'Synopsis,' of which 39 are doubtful. They are more common in fish and birds than in any other class of animals, and they usually inhabit the alimentary canal.

The anterior pore in the genus *Distoma* is subservient to the process of nutrition; the digestive apparatus commences at it and soon divides into two canals, which pass backwards, running parallel to one another, near the centre of the body, towards the caudal extremity, where they terminate. The ventral pore is subservient to the process of generation; the organs of reproduction consist of ovaries, convoluted spermatic tubes, a receptacle (considered from analogy to be a uterus), and a penis. The ovaries are much branched, occupy the circumference of the body, uniting upon each side into two principal trunks, which communicate with one another, and terminate in a receptacle, from which a slender tube leads to the ventral orifice. The penis is often seen projecting a little in front of this orifice. There is said to be no anal orifice, but upon several occasions I have seen what appeared to be an orifice, terminating the caudal extremity.

The species of the genus *Distoma* being numerous, and often of minute size, are in many cases with difficulty distinguished from one another. They have been arranged by Rudolphi in two divisions: in one the head, neck, or body is armed with minute spines; in the second these parts are naked or unarmed. They are further subdivided as the body is flattened or cylindrical; and again, as the anterior or the ventral pore is the larger. The latter is perhaps an unfortunate character upon which to found specific distinctions, as the size of the pores varies when the animal is alive, and may have somewhat a different shape then from what it has

after the specimens have been preserved in spirits of wine for some time. Upon the whole, however, the relative size and shape of the pores appear to be almost the only characters by which many species can be distinguished from each other; and if it were understood that this character was to be taken from the animal which had been preserved in spirits (not from the recent animal), it would help to prevent confusion.

A. Inermia.

a. Plana vel depressa.

Poro ventrali majore.

1. *Distoma hepaticum* *.. Liver of sheep (*Ovis Aries*).
2. ——— *tumidulum* .. Intestine of pipe-fish (*Syngnathus Acus*).
3. ——— *oxycephalum* † { Small intestine of teal (*Anas Crecca*). Small intestine of shoveller (*Anas Clypeata*).
4. ——— *fulvum* .... Intestine of skate (*Raia Batis*).

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* The *Distoma hepaticum* has been longer known than any other species of the genus; under the name *Fasciola hepatica* it is mentioned by Pennant and Turton as a British species. It inhabits the biliary ducts of the sheep, in which it is not at all uncommon, and sometimes occurs in considerable numbers. It has been found also in the ox, the horse, goat, hare and stag; and is said to occur in the human subject, but I am not aware of any well-authenticated case in which it has been detected. It does not occur in healthy sheep; at least the liver of the animals in which it occurs have always a diseased appearance, are irregular and knotted upon the surface, and the biliary ducts are enlarged, sometimes to a considerable extent. It accompanies the disease known under the name of the *rot*, and will be always found in the liver of the animals which die of it.

† On two occasions I found numerous specimens of the *Distoma oxycephalum* in the small intestines of the common shoveller (*Anas Clypeata*); they are about 2 lines in length, colour white, body flattened (not exactly linear, as Rudolphi states), half a line in width, tapering gradually towards the posterior extremity, which is pellucid; the anterior extremity is very narrow; the anterior pore is extremely small, orbicular, and rather inferior than terminal; the ventral pore is very large in comparison, orbicular, and prominent with a tumid margin. The ovaries occupy each side of the body posterior to the ventral pore.

The specimens of *D. oxycephalum* from the teal resemble those last described, but the body is rather subcylindrical than flat; they are between 3 and 4 lines in length; the ventral pore is large, seated near the anterior pore, and the body has the greatest diameter at this part. The posterior extremity is obtuse, and appears to have a very short appendage projecting from it.

Poro antico majore.

5. *Distoma clavigerum* *. Small intestine of frog (*Rana temporaria*).

Poris æqualibus.

[6. *Distoma flexuosum* †. Small intestine of mole (*Talpa europæa*).]

β. Teretiuscula.

Poro ventrali majore.

7. *Distoma cylindraceum*‡. Lungs of frog (*Rana temporaria*).
8. ——— *varicum* §.... Stomach of salmon (*Salmo Salar*).
9. ——— *gibbosum* ? .. Stomach of haddock (*Gadus Æglefinus*).

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* The *Distoma clavigerum* is rather a rare species; I have only met with it once, although I have examined a large number of the *Rana temporaria*. The animal when alive, and fully extended, measured upwards of 2 lines in length (Rudolphi says it does not exceed one line), when contracted about one line; and at the widest part (about the centre of the body) it is half a line in width; it is nearly equally attenuated at each extremity. After remaining in spirits of wine the dorsal surface became convex, and the animal acquired a somewhat elliptical shape, but was still a little wider anteriorly than posteriorly.

† The mole is not a native of this country, consequently the *Distoma flexuosum* is not an Irish entozoon; but as it must take its place among British species, I have allowed it to remain in this list.

‡ The *Distoma cylindraceum* is very common in the lungs of the frog; it is found about the base of these organs, and is sometimes accompanied by the *Ascaris nigrovenosa*. The body is thick, cylindrical, and of a dark colour in some places, owing to the transparency of the parietes, and the nature of the contents of the alimentary canal or ovaries; it becomes opake when kept in spirits of wine. They live for a short time in cold water, and move sluggishly, contracting and enlarging the pores; sometimes, after remaining in water for a short time, they discharged a quantity of a dark-coloured fluid from the anterior pore; and on some occasions I have found them adhering by the anterior pore to the parts in which they are contained.

§ The *Distoma varicum* appears to be common in salmon from some localities and in some seasons, and rare in others; it inhabits the stomach and the intestinal canal near the stomach. Its length is about half a line, but this varies according to the motions of the animal; when fully extended it is nearly equally attenuated at each extremity: its colour is white, but the contents of the ovaries give the part of the body in which they are contained a reddish yellow tinge. The anterior pore is circular and small; the ventral pore very large, the whole width of the body, and its margin becomes prominent soon after the animal is placed in water.

10. *Distoma appendiculatum** { Stomach of sturgeon (*Acipenser Sturio*). Stomach of sand-eel (*Ammodytes Lancea*).
11. ——— *rufoviride.* Stomach of conger-eel (*Anguilla Conger*).
12. ——— *globulus*.. Small intestine of wild swan (*Cygnus ferus*).
13. ——— *reflexum*? † (Creplin). { Intestine of lump-sucker (*Cyclopterus Lumpus*).

Poro antico majore.

14. *Distoma excisum.* Stomach of mackerel (*Scomber Scomber*).

B. Armata.

Echinata.

15. *Distoma trigonocephalum* ‡. { Small intestine of hedge-hog (*Erinaceus europæus*).

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* The *Distoma appendiculatum*, from the stomach of the sand-eel (*Ammodytes Lancea*), is about a line in length; colour white, except about the centre of the body, where it has a yellowish red tinge. The body is cylindrical, and varies in shape as the animal is fully extended, or as the caudal extremity is retracted; when this part is retracted the caudal extremity is wider than the anterior, but when fully protruded it is much more attenuated. In some of the specimens which I examined, the caudal extremity was fully retracted, in others fully protruded, and in some only partially retracted; hence they might easily be taken for distinct species. The pores are circular, seated near each other; the ventral the larger, and slightly prominent.

† The *Distoma* from the intestinal canal of the *Cyclopterus Lumpus* resembles the *D. reflexum* of Creplin; it is about three-quarters of a line in length; colour white; body cylindrical, nearly of the same diameter throughout. The anterior pore is small and circular; the ventral large and prominent, its orifice circular. The neck (or the space between the anterior and the ventral pore) is rather convex on the dorsal surface and concave upon the abdominal; it is narrow anteriorly, and becomes wider as it approaches the ventral pore. The ovaries appear to be full of ova.

‡ The *Distoma trigonocephalum*, which inhabits the small intestine near the stomach of the hedge-hog, is rather a rare species. It is about $\frac{1}{2}$ a line in length, and of a dirty reddish colour after remaining in spirits of wine; body flattened, wider anteriorly than posteriorly, and curved. The anterior pore is somewhat elliptical, not looking forwards; the ventral pore is orbicular, and situated nearer the anterior than the posterior extremity of the body.

16.	*Distoma echinatum* * .	Small intestine of swan (*Cygnus Olor*). Rectum of wild swan (*Cygnus ferus*). Small intestine of golden-eye (*Clangula chrysophthalmos*). Rectum and cæca of widgeon (*Mareca Penelope*). Small intestine and rectum of crested grebe and tippet grebe (*Podiceps cristatus*).
17.	——— *militare*....	Rectum of curlew (*Numenius arquata*).
18.	——— *spinulosum* †.	Small intestine of golden eye (*Clangula chrysophthalmos*). Small intestine of black-headed gull (*Larus ridibundus*). Small intestine of curlew (*Numenius arquata*).

* The *Distoma echinatum*, from the small intestine of the golden-eye (*Clangula chrysophthalmos*), is flattened, nearly 3 lines in length; colour dirty white, particularly about the situation of the ovaries, which occupy the sides of the body, and appear to contain numerous ova. Immediately on being placed in water they became convex on the dorsal surface, and concave upon the abdominal surface. The head is subreniform, armed with a ring of distinct spines; neck rather long, concave inferiorly; anterior pore very small and terminal, ventral large and prominent; both orbicular. In one specimen, a short and conical cirrhus projected a little anterior to the ventral pore.

The specimens of *Distoma echinatum* from the rectum of the wild swan which I have found, are in some cases 6 or 7 lines in length, in others not more than 2 lines; the majority belong to the latter; and there are none of an intermediate length, though both apparently belong to the same species. The body is more cylindrical than in the specimens from the golden-eye; the pores are distinct and circular, seated near each other, the ventral being the larger. The head is small and armed with spines; the neck is convex upon the dorsal, and concave upon the abdominal surface.

My specimens of *Distoma echinatum* from the rectum and cæca of the widgeon have a greater length and transverse diameter than those from which Rudolphi took his description; the head is also smaller in proportion to the body, and is armed with more numerous spines than are represented in Bremser's figure of this species.

† The *Distoma spinulosum*, from the golden-eye (*Clangula chrysophthalmos*), is little more than a line and a half in length; colour perfectly white; flat and linear before being immersed in spirits of wine, becoming rather cylindrical afterwards. The head is small, armed with minute spines; neck conical and long, about half the width of the body, and one-third of its length. The body is pretty

19. *Distoma scabrum*.... { Intestine of whiting-pollach (*Merlangus Pollachius*).
20. ——— *contortum* *.. Gills of sun-fish (*Orthagoriscus Mola*).
21. ——— *nigroflavum* † { Intestine of sun-fish (*Orthagoriscus Mola*).

Species dubiæ.

22. *Distoma*.. { Small intestine of great black-backed gull (*Larus marinus*).
23. ———.. Small intestine of scoter (*Oidemia nigra*).
24. ——— ‡. Rectum and cæca of tame swan (*Cygnus Olor*).

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nearly of the same diameter throughout; the anterior pore is very small, the ventral larger and prominent, the aperture circular; pores rather distant from one another.

* In the month of July 1839, I found a large number of the *Distoma contortum* on the gills of a fine specimen of the sun-fish (*Orthagoriscus Mola*), which is now in the collection of the Natural History Society of Dublin. The longest measures 10 or 11 lines in length; colour white anteriorly, yellowish red posteriorly. The body is cylindrical, its greatest diameter being immediately behind the ventral pore, from which it gradually diminishes towards the caudal extremity. All the specimens soon became curved after being removed from the animal; indeed it is from this circumstance that Rudolphi gave the species its name. The anterior pore is small and circular; the ventral large and elliptical or circular; in some this organ is seated upon a peduncle fully the length of the neck. The neck measures nearly 3 lines in the longest specimens; it is convex upon the dorsal, and concave upon the ventral surface; it, as well as the head, is armed, particularly upon the convex surface, with a number of minute spines, which are not seen posterior to the ventral pore. The ova are very small, exceedingly numerous, and of a yellow colour; they appear to be the cause of the colour in the posterior division of the body.

† In the intestinal canal of the same sun-fish, I found several specimens of a *Distoma* which has the characters of the *Distoma nigroflavum* of Rudolphi, but I could not see the aculei upon the head or neck. The longest specimen measures an inch and a half; the majority are about three-quarters of an inch in length; colour in one part black, in another yellowish; head white. The ventral pore is pedunculated, the peduncle being sometimes as long as the neck (which gives this species a resemblance to the *Distoma furcatum*). The body is cylindrical, slender, nearly of the same diameter throughout; the integument flaccid.

‡ This *Distoma*, of which I found many specimens in the cæca and rectum of a swan (*Cygnus Olor*), is a very beautiful species, and does not appear to have been previously described. It approaches most closely to the *Distoma echinatum* of Rudolphi, but differs in several

25. *Distoma*.. Rectum of tippet grebe (*Podiceps cristatus*).
26. ——— *. Stomach of red gurnard (*Trigla Pini*).
27. ——— † { Intestine of haddock (*Gadus Æglefinus*). Intestine of whiting (*Merlangus vulgaris*). Intestine of coal-fish (*Merlangus Carbonarius*).
28. ——— ‡ Intestine of turbot (*Pleuronectes maximus*).

particulars from it. It is somewhat more than half an inch in length, and 2 lines in width at the widest part (immediately behind the ventral pore); it continues to be nearly of the same diameter, and then gradually diminishes towards the caudal extremity. The head is distinct and reniform, larger in proportion than that of the *Distoma echinatum*, edged with short spines placed at regular intervals. The neck and anterior part of the body are armed with very numerous minute spines, in which it also differs from the *D. echinatum*. After the animals had been immersed in spirits of wine, the neck became curved, the convexity upon the dorsal surface. The pores are orbicular; the anterior small, the ventral much larger; they are seated near each other.

* This species, which I found in the stomach of the common red gurnard (*Trigla Pini*), does not appear to have been previously described. It belongs to the division in which the body is cylindrical, and to the subdivision in which the pores are of equal size. It measures about half a line in length; colour white at each extremity, yellowish red about the centre; both pores are orbicular, inferior, and seated near one another, the ventral being prominent. It lived for a short time in water after being removed from the animal. After remaining for a short time in spirits of wine, the pores were seen to be of equal size; but in this as in other species of *Distoma*, when the animal is alive it dilates and contracts the pores constantly, so that at one time the anterior pore is the larger, at another the ventral is the larger.

† This species of *Distoma*, which inhabits the intestinal canal of the haddock, the whiting and the coal-fish (*Merlangus Carbonarius*), belongs to the division in which the body is flat, and to the subdivision in which the pores are of unequal size, the anterior being the larger. The longest specimen measures 2 lines in length, the smallest 1 line; colour yellowish in centre, white in other parts; dorsal surface convex, ventral surface flat; more attenuated anteriorly than posteriorly, extremities obtuse. The anterior pore is orbicular, sometimes elliptical, always double the size of the ventral; ventral pore orbicular, situated in the anterior half of the body, but near the centre.

‡ This species does not appear to have been previously described; it belongs to the same division and subdivision as the preceding, the body being flat and the pores unequal. It is about a line in length, flattened and linear, of equal diameter in its whole length, not attenuated at the extremities. Both pores are orbicular; anterior more

29. *Distoma*.. Intestine of holibut (*Hippoglossus vulgaris*).
30. ——— *. Intestine of sun-fish (*Orthagoriscus Mola*).
[31. ——— †. Œsophagus of common snake (*Natrix torquata*).]

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than twice the size of the ventral; ventral pore distant, seated near the centre of the body.

* This species of *Distoma*, which I found in the intestines of the sun-fish (*Orthagoriscus Mola*), has not been previously described. It belongs to the division in which the body is cylindrical, and to the subdivision in which the pores are of unequal size. It measures from 4 to 5 lines in length; colour a dirty yellow after remaining in spirits of wine; body cylindrical; greatest diameter near the ventral pore, diminishing gradually towards each extremity; neck cylindrical; both pores elliptical; the long diameter of the anterior transverse, of the ventral pore longitudinal; ventral pore larger than the anterior, and prominent.

This species of *Distoma* differs from the *D. contortum* (which inhabits the gills of the sun-fish) in being of a different colour and smaller size; the ventral pore is not pedunculated as it is in the *D. contortum* and *D. nigroflavum*; the body of the animal does not become curved after being placed in spirits of wine, and the head or neck is not armed with spines, in which it also differs from those two species.

† I have found many specimens of an undescribed species of *Distoma* in the œsophagus of the common snake (*Natrix torquata*), which is an inhabitant of England, but not of this country. This species is more tenacious of life than most other *Distomata*, as it lived for some time in a vessel of fresh water. It belongs to the division in which the body is cylindrical, and to the subdivision in which the pores are of equal size. It measures a line and a half in length when fully extended, when contracted about a line. The body is cylindrical, but when the animal is fully extended, it appears to be flattened, although, after it has been kept in spirits of wine for a short time, it becomes cylindrical. The colour of the body between the anterior and ventral pore is white, and two vessels are seen here passing backwards from the anterior pore; the ovaries, which occupy the sides of the body, are of a reddish colour; posteriorly the body is filled with a black substance, similar to what is seen in the *D. cylindraceum*, from which circumstance the species might perhaps be named *Distoma nigrovenosum*; the greatest diameter of the body is about the ventral pore; the caudal extremity is obtuse. When the animal is alive, the anterior pore is sometimes larger, sometimes smaller than the ventral; its shape is also either orbicular or elliptical; after its death, both pores become orbicular and of equal size; the ventral pore is prominent. The distance between the pores also varies during the motions of the animal; after it has lain in spirits of wine, they are seated close to one another.

32. *Distoma* *. Small intestine of pochard (*Fuligula ferina*).

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* In the month of January 1839 I found a large number of an apparently undescribed species of *Distoma* in the small intestine of the pochard (*Fuligula ferina*); when recent they were subrotund, but (after having lain in water for twenty-four hours) they became nearly flat on being placed in spirits; colour reddish at first, afterwards dirty white; head subreniform, unarmed; neck (or that part between the pores) generally curved, the concavity upon the abdominal surface forming a channel at this place. Both extremities attenuated. Pores orbicular, seated near each other; anterior very small and terminal; ventral much larger, cup-shaped and prominent. Between the anterior and ventral pore, close to the ventral, a lemniscus is sometimes seen to project.

[To be continued.]

XLVIII.—*Additions to the Fauna of Ireland.* By William Thompson, Pres. Nat. Hist. and Phil. Society of Belfast.

MOLLUSCA.

Class Gasteropoda.

Order Nudibranchiata.

Doris repanda, Alder and Hancock, Annals Nat. Hist. vol. ix. p. 32. A specimen of this *Doris* was found between tide-marks at Roundstone, county Galway, in July 1840: R. Ball, E. Forbes, W. T.

Doris aspera, Ald. and Hanc., Ann. Nat. Hist. ix. 32. Very young examples of a *Doris*, and most probably (according to Mr. Alder) of this species, were obtained at Glandore bay, county of Cork, by Dr. George J. Allman in the month of August 1842. Mr. Alder himself procured specimens of *D. aspera* during an excursion in September last with Dr. Farran of Dublin to Malahide, on the coast of the county of Dublin*.

Goniodoris nodosa, Mont. (sp.); *Doris nodosa*, Mont., Linn. Trans. vol. ix. p. 107. t. 7. f. 2. Twelve specimens of *G. nodosa* occurred on a plant of *Fucus vesiculosus* dredged in Killery bay, county of Galway, in July 1840: R. Ball, E. Forbes, G. C. Hyndman, W. T. Mr. Alder found the species to be plentiful at Malahide in September last.

Polycera ocellata, Ald. and Hanc., Ann. Nat. Hist. vol. ix. p. 33. Mr. Alder, by means of the dredge, took this species commonly and of all sizes in Dublin bay in August last, and subsequently obtained a specimen at Malahide.

Polycera citrina, Alder, Ann. Nat. Hist. vol. vi. p. 340. pl. 9. f. 7—9.

* The new species of *Mollusca Nudibranchia* obtained on this occasion are described by Messrs. Alder and Hancock at p. 161 of the present volume.